Ensemble Trace Plot

Part I - Mission Connection

a. **Product Description:** Currently the National Weather Service (NWS) River Forecast Centers (RFCs) and Weather Field Offices (WFOs) produce a wide variety of river forecasts, which indicate current and future river conditions. The experimental Ensemble Trace Plot prepared by the North Central River Forecast center (NCRFC) will be issued as a Web page graphic. The graphic will be for the NCRFC's area of responsibility. It will be issued once a month (after the Climate Prediction center (CPC) outlooks are released at mid-month). It will cover the three month period after the issuance (for example, graphic released around May 26 will cover June-August period).

b. **Purpose:** A wide variety of water users need more information than simple chance of flooding. The trace plots explain the basis for trace probabilities. The users can look at various hydrograph traces that comprise the probabilities for more information. From the display of all the traces, the user can look at particular hydrograph Traces and get a sense of the variability between different climate inputs and can compare one year to another.

c. **Audience:** The forecast graphic is targeted at partners and regional customers, such as, the US Army Corps of Engineers, the US Geological Survey, Federal Emergency Management Agency, state Emergency Managers (EMs), and river authorities with areas of responsibility over several states. Water resources managers and climatologists will find these graphics for drought monitoring and climatological applications. Local EMs and the general public may also find this graphic useful.

d. **Presentation Format:** The Ensemble Trace Plot is a web-based graphic and is presented with the map indicating NCRFC's area of responsibility. Forecast points along the rivers are denoted by "clickable" dots. The graphic has stage/flow on the y-axes and time on the x-axis and has a validity period of three months. The detailed explanation of this graphic is provided for the user(s) through a button ("About") on the page. The graphic is located at: http://www.crh.noaa.gov/ncrfc/ahps/ESPMAPS

e. **Feedback Method:** Comments regarding this graphic are sought through the feedback link on the webpage or they may also be sent to:

North Central River Forecast Center
17733 Lake Drive West
Chanhassen, MN 55317
Attn: Dan Luna
daniel.luna@noaa.gov

An online survey is also available on this page.

Experimental Feedback Period: March 15, 2005 through May 15, 2005

Part II - Technical Description

a. **Format and Science Basis:** NCRFC runs the Ensemble Streamflow Prediction (ESP) component of the National Weather Service River Forecasting System (NWSRFS) to generate long term probabilities. From ESP, the Conditional Simulation (CS) uses recorded historical climate data for the specified forecast period, along with the basin's current conditions (soil moisture, snow cover, etc.) as input to the hydrologic model. The simulation also may include official meteorological and climate outlooks up to three months into the future. Individual simulated hydrographs (or traces) are produced for each annual climate scenario. Each trace (50 years) is plotted on the graphic. The x-axis indicates time and the y-axes indicate stage and flow. These traces can be used to determine what years are factors in high or low probabilities.

b. **Product Availability:** The Ensemble Trace Plot will be produced and sent to the web on a monthly basis, shortly after the middle of the month for each forecast point within our area of responsibility. The graphic is located at: http://www.crh.noaa.gov/ncrfc/ahps/ESPMAPS

c. **Additional Information:** Contact Dan Luna (daniel.luna@noaa.gov) or John Halquist (john.halquist@noaa.gov) at NCRFC (phone 952-361-6650).